

Fig. 1: A clamp-on sensor

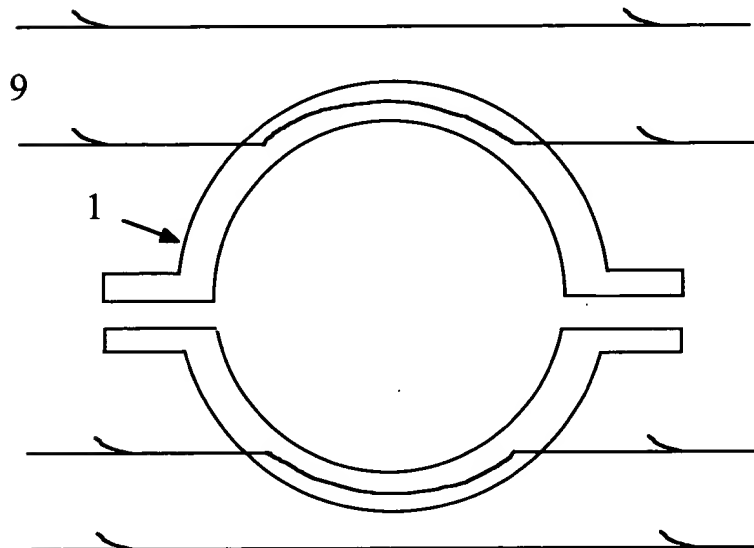


Fig. 2: Uniform magnetic field (H_u) 9 of the earth H_e acting on the core.

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DESMAN		

08/ 579395

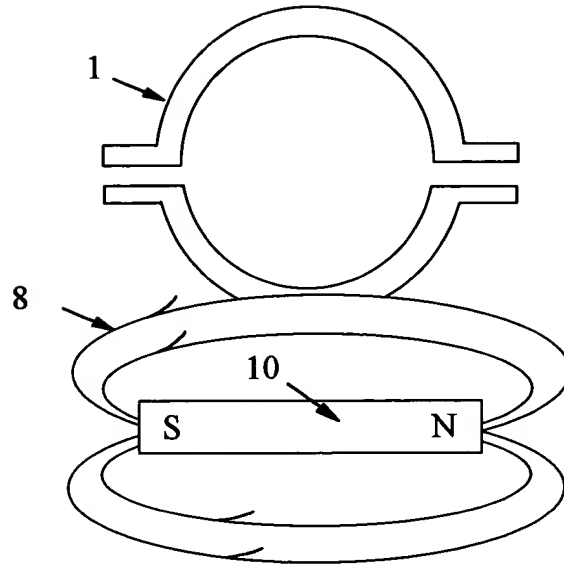


Fig. 3: A non-uniform magnetic field (H_n) 8 from a magnet acting on the core.

08 579395

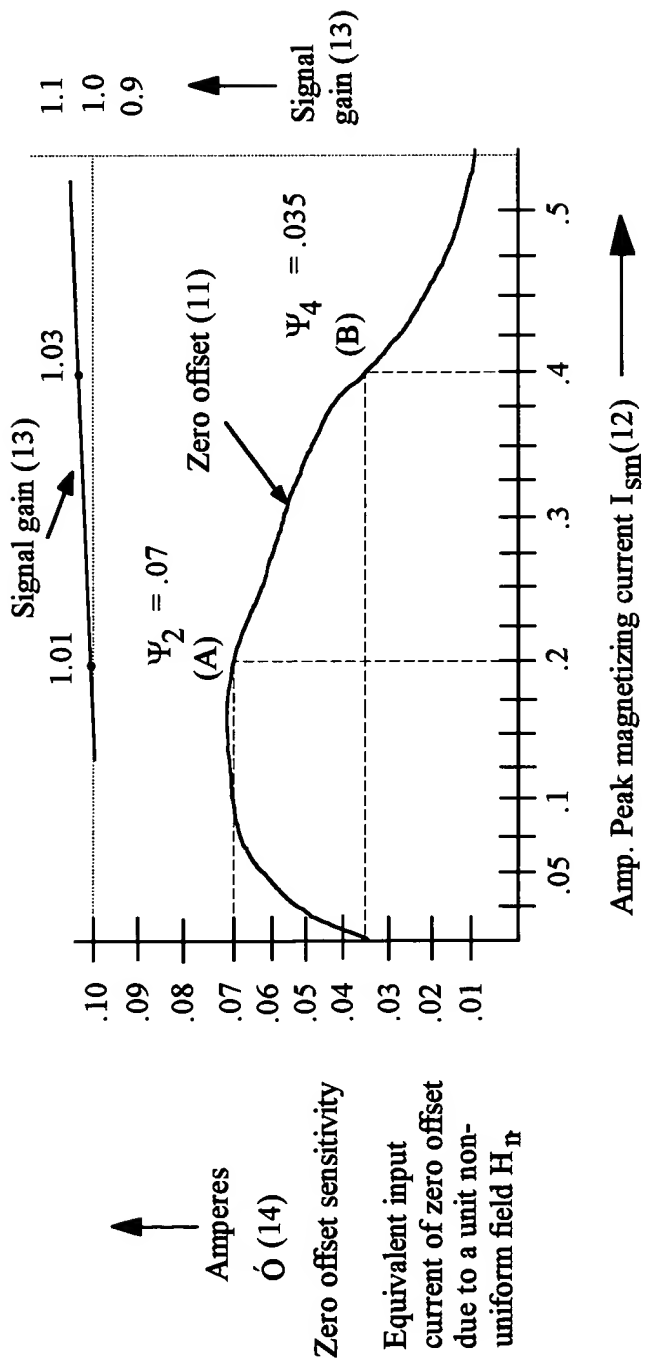


Fig. 4

Normalized Signal Gain (g) vs. I_{sm}
and
Normalized Zero Offset from H_n vs. I_{sm}
for
Five inch diameter aperture sensor #88.

12-25-95 1044

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
AFISMAN		

08-579395

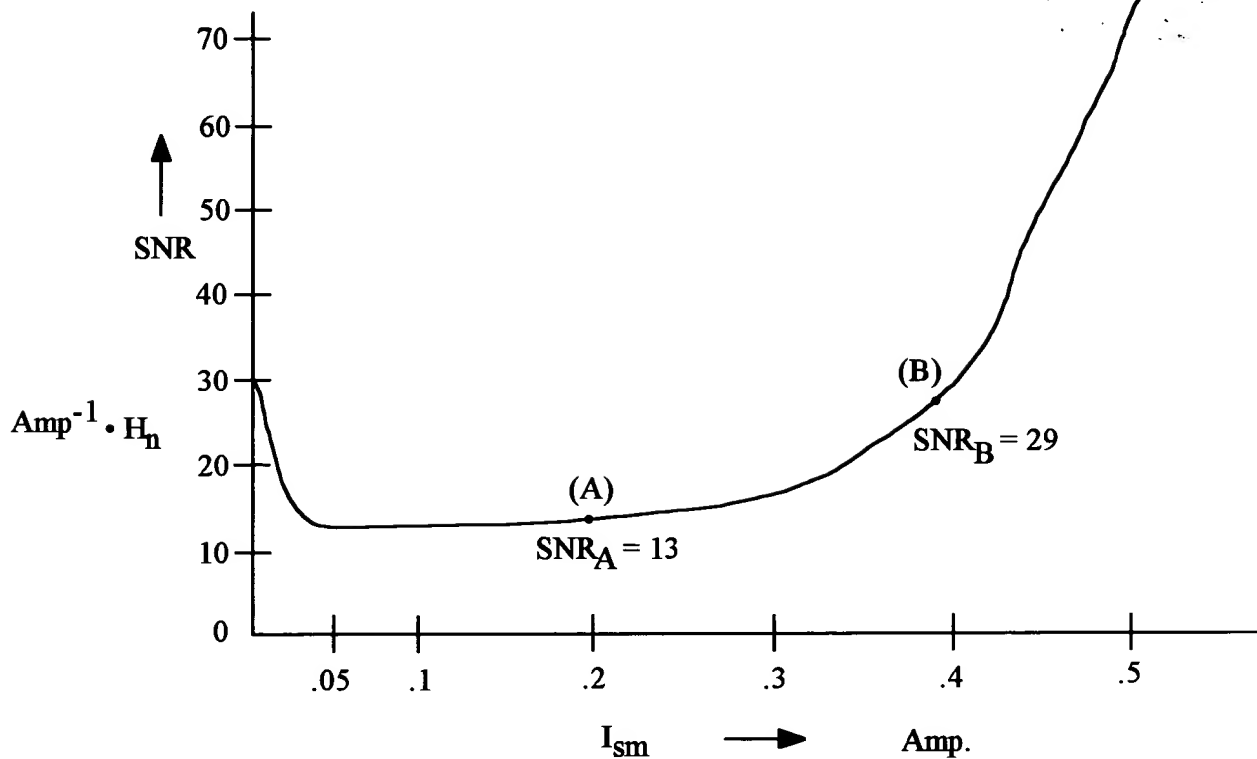


Figure 5
Signal to Noise Ratio (SNR) for Non-Uniform Field H_n
vs.
Operating Parameter I_{sm}
for
5" dia. aperture clip #88 in SN 2336

$$\begin{aligned}
 SNR &\equiv \frac{\left. \frac{\delta V}{\delta I} \right\} \frac{\text{output}}{\text{noise}}}{\frac{\delta V}{\delta N}} \\
 &= \frac{\text{gain}}{\text{gain} \cdot \frac{\delta \dot{O}}{\delta N}} \cdot \frac{Z}{g} = \text{equivalent input offset } I \text{ per unit non-uniform field } H_n
 \end{aligned}$$

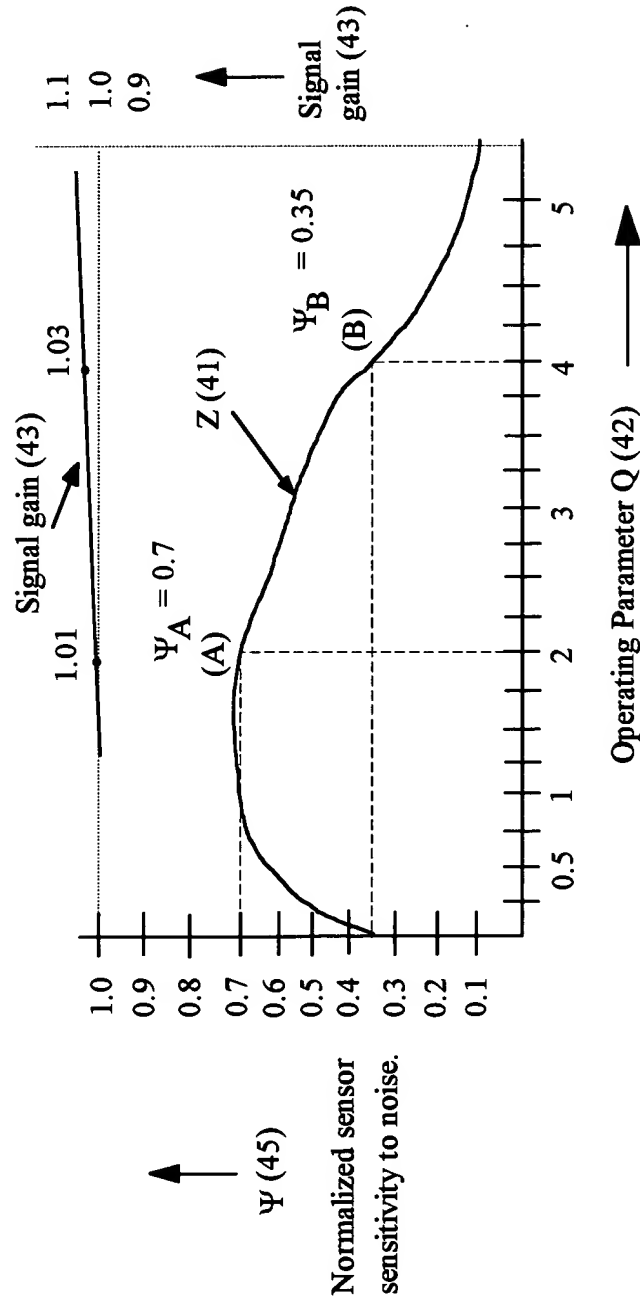


Fig. 6

Normalized Signal Gain vs. Operating Parameter Magnitude
and
Normalized Sensitivity to H_n vs. Operating Parameter Magnitude
for
A Hypothetical Sensor Presented as an Illustration.

APPROVED	O. G. FIG.	
BY	CLASS	SUBCLASS
DATE	TIME	MAN

08 579395

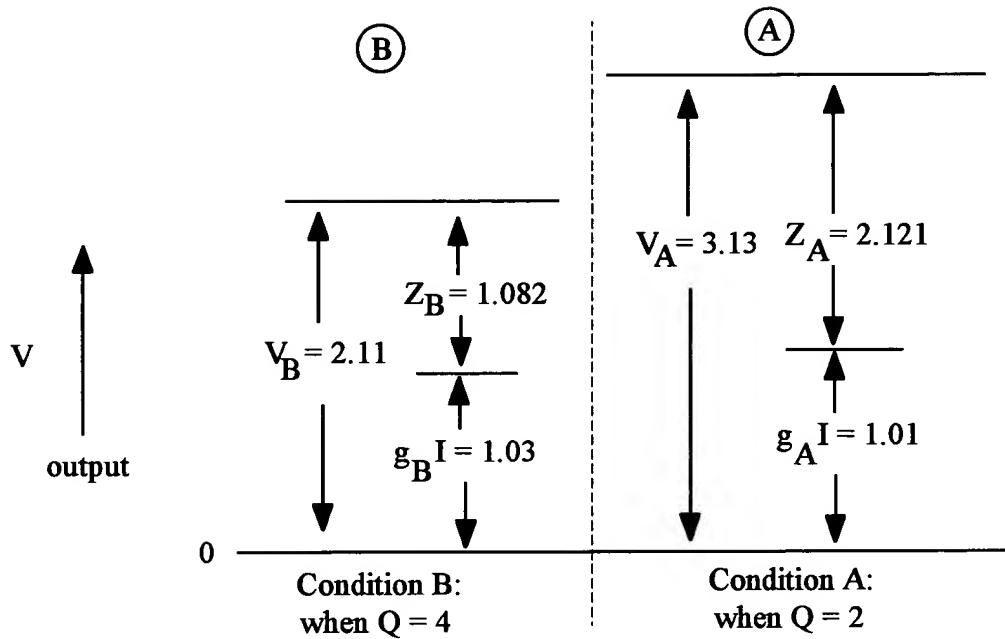


Fig. 7

The illustration displays typical relationships between error, gain, etc., before correction of a hypothetical sensor.

Variables:

$$I = 1$$

$$N = 3$$

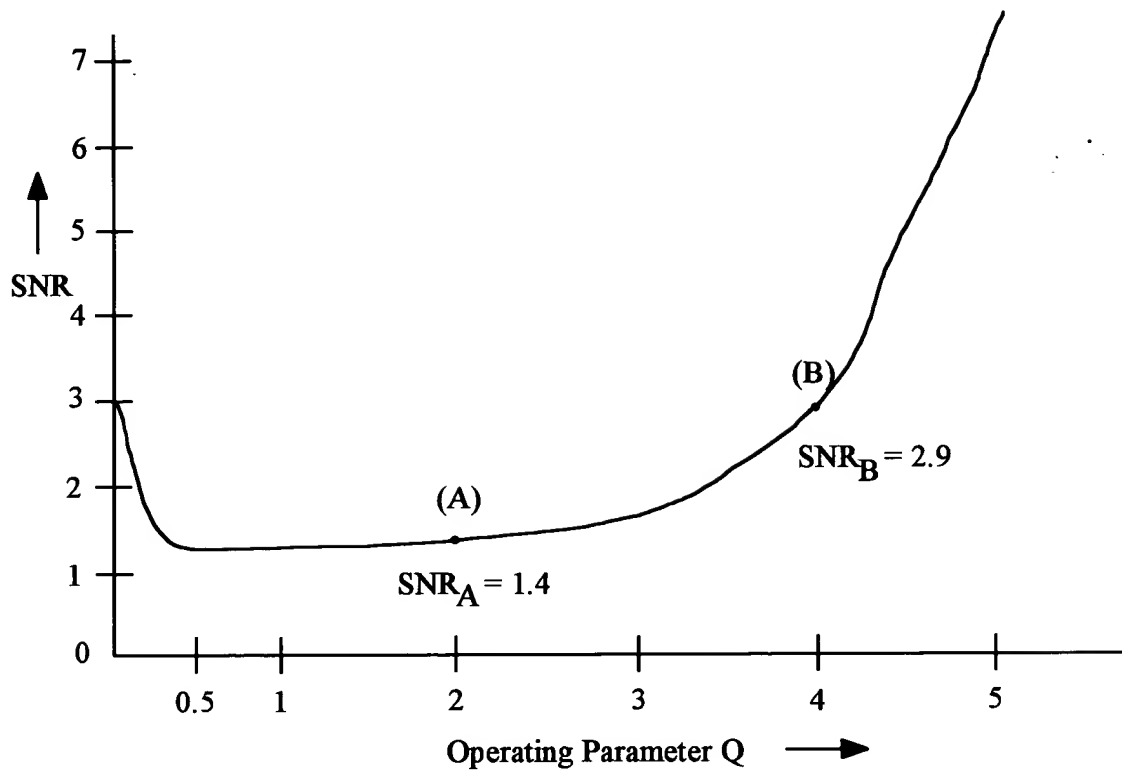


Figure 8
Signal to Noise Ratio (SNR)
vs.
Operating Parameter Q
for
A Hypothetical Sensor shown in Fig. 6

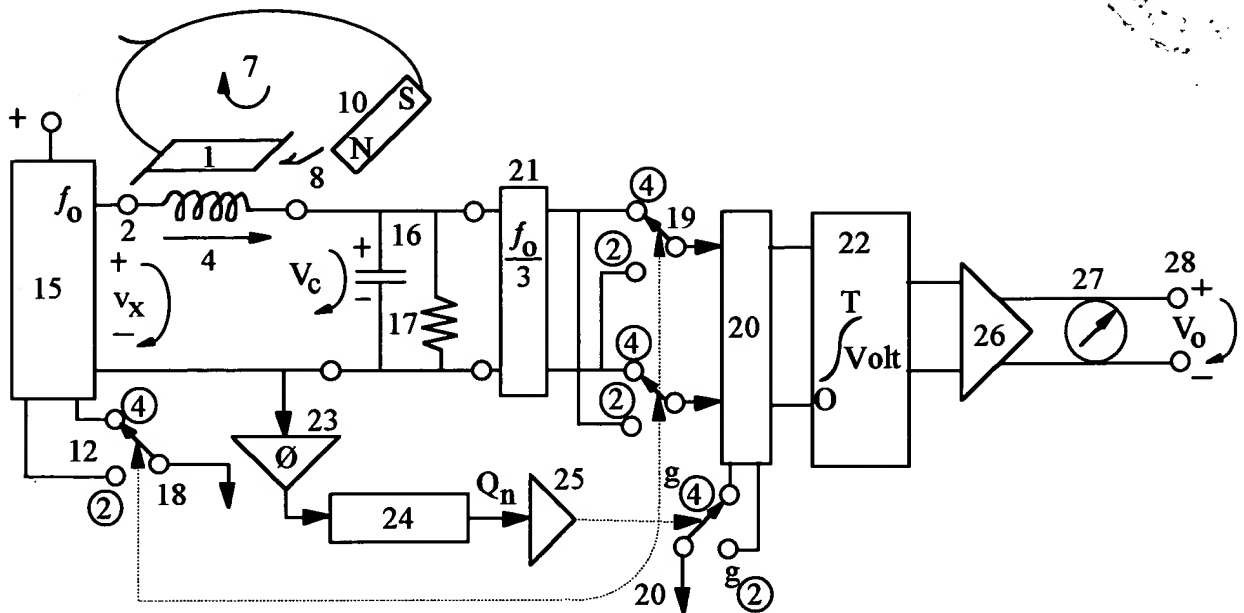


Fig. 9: A switching implementation of the mathematical relationship shown in Eq. i).

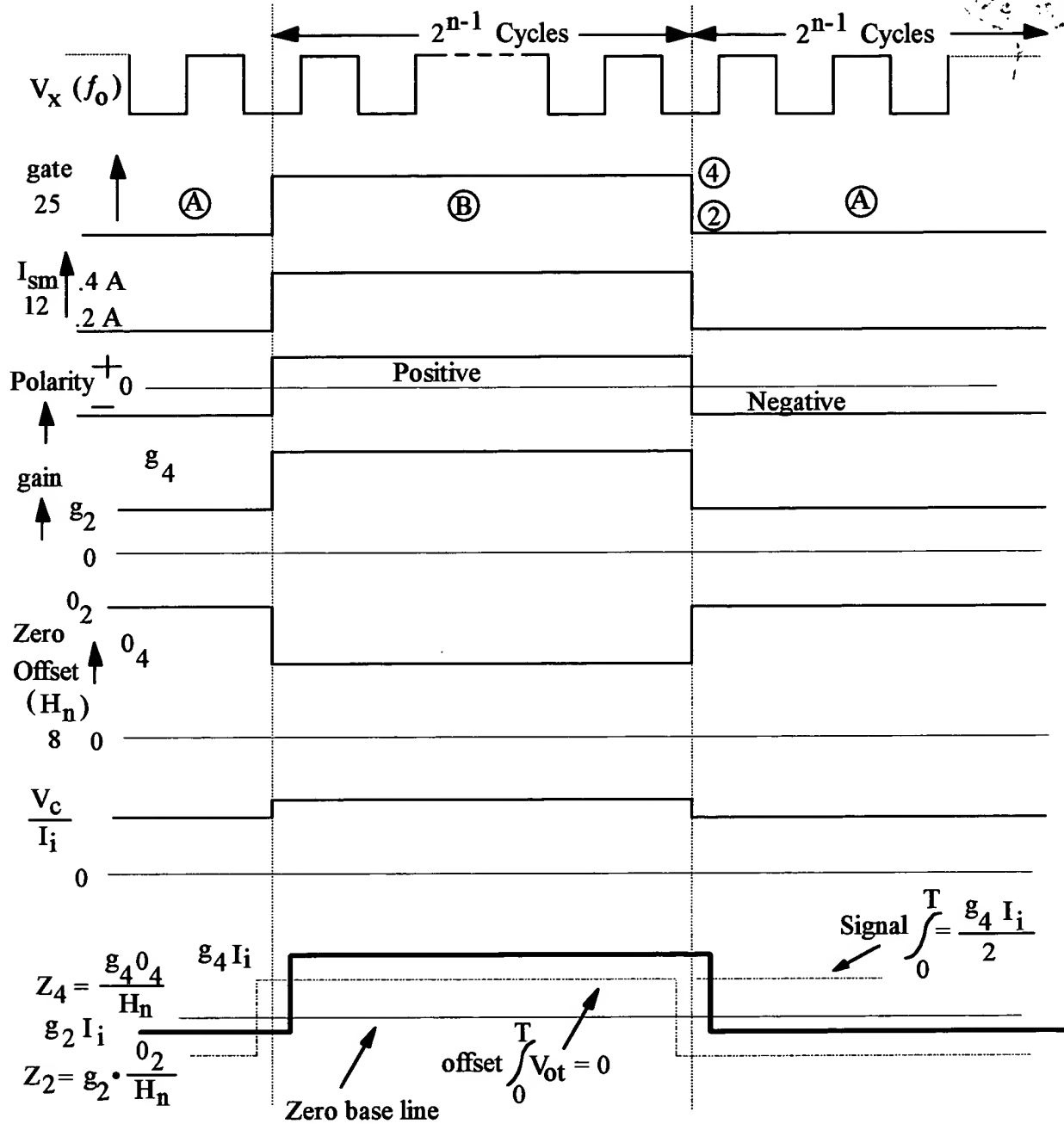


Fig. 10: Voltages in Fig. 9 shown as they change from time interval (A) to time interval (B).

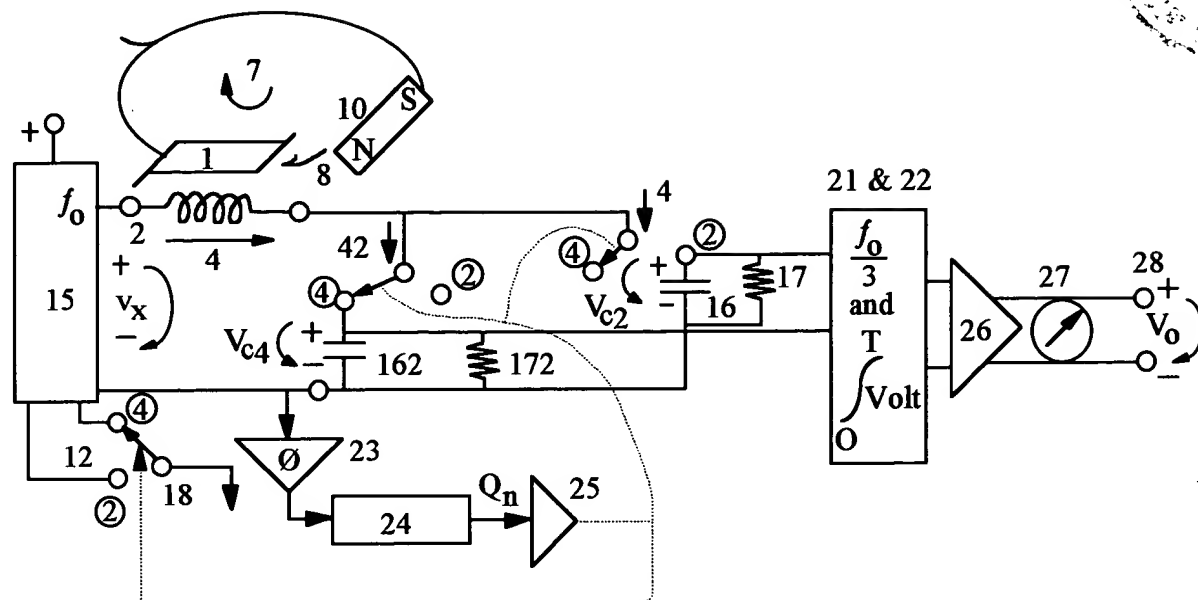


Fig. 11: A simpler implementation of the method defined in Eq. i).

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DAVISMAN		

MOD 579395

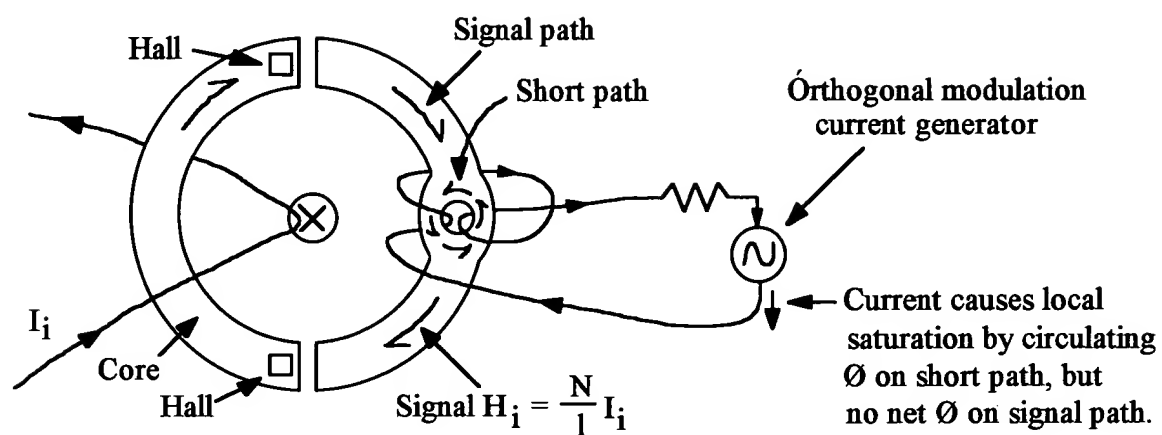


Fig. 12: Proposed core structure and magnetic reluctance selective modulation means for a Hall type clamp-on DC ammeter.

APPROVED	O. G. FIG.	
BY	CLASS	SUBCLASS
RAE ISMAN		

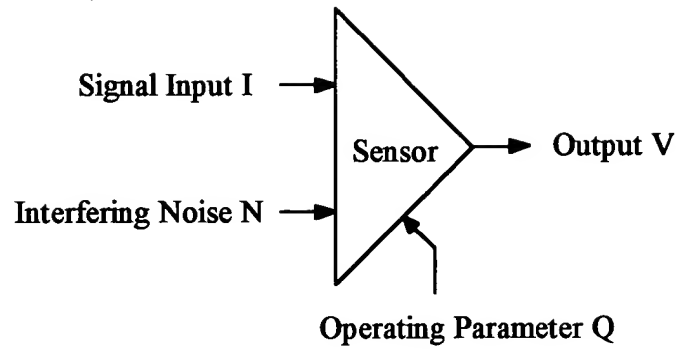


Fig. 13. General representation of a Sensor described in Eq. a) thru Eq. j).